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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/719,999	11/21/2003	Knut Kahlisch	1890-0011	1506

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EXAMINER

RAO, SHRINIVAS H

ART UNIT	PAPER NUMBER
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2814

DATE MAILED: 05/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/719,999

Applicant(s)

KAHLISCH ET AL.

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11, 13 and 14 is/are pending in the application.
- 4a) Of the above claim(s) 16-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11, 13 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10/18/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Applicants' amendment filed on has been forwarded to the examiner on Feb. 17, 2005.

Therefore claims 1-11 and 13-14 as amended by the amendment are currently pending in the Application.

Claims 12 and 15 have been cancelled by the amendment.

Non-elected without traverse claims 16-22 must be cancelled as stated below in order to provide a complete response to the ~~is~~ Office Action.

Election/Restrictions

It is noted that Applicants' response filed on February 17, 2005 does not state that Applicants' affirm the telephone election made by Mr. Harold Moore(37, 892) and therefore the response filed on 02/17/2005 is technically non-responsive, however in order to move the case forward the response has been entered .

However, if in response to this Office Action a proper reply (including affirmation of the election and cancellation of non-elected claims) is not received the Office will have no choice but to abandon the Application for being nonresponsive.

This application contains claims 16-22 that are drawn to an invention nonelected with out traverse in Paper mailed on November 03, 2004 .

A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Failure to cancel the nonelected claims may result in the abandonment of the Application.

Information Disclosure Statement

The IDS filed on October 14, 2003 has been entered on October 18, 2004.

An initialed copy of the PTO-1449 is enclosed herewith instructions to Contract Staff to mail it with the instant Office Action.

Claim Rejections - 35 USC § 112

A. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1 to 11 and 13-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 line 1 recites "package" instead of "supporting substrate" while package has been mentioned a couple of times in the back ground art description of the specification it describes a different part then "the supporting substrate".

Claim 1 line 5 describes "a chip mechanically fixed (to the interconnect layer)" which is also not described in the specification as originally filed.

B. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-11 and 13-14 are further rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As the chip mechanically fixed is not described in the specification, it further not clear what is included /excluded by the expression "mechanically fixed", thus rendering the claims also indefinite under second paragraph of 112 as it cannot be ascertained what is included/excluded. Further knowledge of one of ordinary skill in the art or prior art do not clarify what Applicants' intend to include/exclude.

Dependent claims 2 to 11 and 13-14 are rejected at least for depending upon rejected claim 1.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsai et al. (U.S. Patent Application publication No. 2002/0092162 now USP No. 6,772,512, herein after Tsai) in view of Kovac (U.S. Patent No.)

With respect to claim 1, to the extent understood, Tsai describes a(package) supporting structure for a chip, comprising: a supporting substrate with a bond opening therein (Tsai figure 2A # 210-substrate , opening # p, Kovac figures 2-3 #10 with opening 16, col. 3 lines 60-67) ; an interconnect layer on the supporting substrate,(Tsai figure 2 B # 221, Kovac figure 4 # 12) in which a bonding channel overlapping with the bond opening is formed, (Tsai figure 2B-C, # 211 etc. Kovac col. 4 lines 4-6, not illustrated in figures) and a chip mechanically fixed to the interconnect layer to cover the bonding channel (Tsai figure 2 B 220) an encapsulation material arranged in the bonding channel (Tsai col. 5 lines 5-7) an escape prevention structure for the bonding channel, (Kovac figure 4 # 26,30) to enable escaping of air from the bonding channel and to substantially prevent the encapsulation material from escaping from the bonding channel on introducing encapsulation material into the bonding channel after the applying of a chip to the supporting structure.

The recitation, " to enable escaping of air from bonding channel and to substantially prevent the encapsulation material from escaping from the bonding channel on introducing encapsulation material into the bonding channel after the applying of a chip to the supporting structure." are taken to be functionally inherent properties.

It is elementary that the mere recitation of a newly discovered function or property, inherently possessed by things in the prior art , does not cause a claim drawn to distinguish over the prior art. Additionally, where the Patent Office has reason to believe that a functional limitation asserted to be critical for establishing, novelty in

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the claimed subject matter , may in fact be an inherent characteristic of the prior art, it possesses the authority to require the applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied on. In re Swinehart 169 USPQ 226 (CCPA 1970).

(It is noted that Tsai col.3 lines 5-10 , col. 5 lines 10-13Kovac figure 4, etc. and abstract lines 2-12 describe the functionally inherent property to enable escaping of air from bonding channel and to prevent the encapsulation material from escaping from the bonding channel on introducing encapsulation material into the bonding channel after the applying of a chip to the supporting structure.

With respect to claim 2 the package of claim 1 wherein the escape prevention structure is designed to prevent escaping of the Kovac describes the supporting structure of claim 1 , encapsulation material due to the capillary effect. (Kovac col. 4 lines 50-54)

With respect to claims 3 and 4 Kovac describes the package of claim 1 , wherein the escape prevention structure includes an opening with such a cross-sectional area, so that escaping of the encapsulation material caused by the capillary effect is prevented. (Kovac's Abstract last 6 lines, col.4 lines 50-54 and figures 1-5 ,etc.).

With respect to claim 5 Kovac describes the package (supporting structure) of claim 4, wherein the barrier structure is connected to the interconnect layer. (Kovac col. 4 lines 17-- 18).

With respect to claim 6 Kovac describes the package (supporting structure) of claim 4, wherein tie barrier structure is formed integrally with the interconnect layer. (Kovac figures 30 and 32 -formed integrally).

With respect .to claim 7 Kovac describes the (package) supporting structure of claim 4, wherein the barrier structure extends across the entire width of the bonding channel. (Kovac e.g. figure 4 30 extends across wider portion above 20).

With respect to claim 8 Kovac describes the (package) supporting structure of claim 4, wherein the barrier structure is formed, so that a cross-section of the bonding channel tapers in a direction to the lateral end. (Tsai figure 1B) .

With respect to claim 9 Kovac describes the (package) supporting structure of claim 4, wherein the barrier structure has a convex shape. (Tsai fig. 1B #140).

With respect to claim 10 Kovac describes the (package) supporting structure of barrier structure is disposed in the bonding channel and spaced from the interconnect layer. (Kovac e.g. figure 4 , 30 disposed in 14, 20 spaced from 32).

With respect to claim 11 Kovac describes the (package) supporting structure of claim 4, wherein the supporting structure of the escape prevention structure includes a recess in the supporting substrate (Kovac figure 4 # 20).

With respect to claim 13 Kovac describes the (package) supporting structure of claim 11 , wherein the interconnect layer is disposed on a surface of the supporting substrate, wherein the recess on the surface extends across a sidewall of the bonding channel. (Kovac figure 3 , 32 on surface of 12, recess 20 along side wall of bonding channel).

With respect to claim 14 Kovac describes the (package) supporting structure of claim 11, wherein the recess is disposed in a region of the bonding channel, wherein the recess extends from a first surface of the supporting substrate to a second surface of the supporting substrate. (Kovac figure 4 recess extends from top to bottom surface of support substrate 12).

Response to Arguments

Applicant's arguments with respect to claim 1-11, 13-14 have been considered but are moot in view of the new ground(s) of rejection.

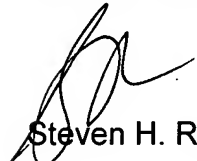
Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communication from the examiner should be directed to Steven H. Rao whose telephone number is (571) 272-1718. The examiner can normally be reached on Monday- Friday from approximately 7:00 a.m. to 5:30 p.m.



Steven H. Rao

Patent Examiner

April 27, 2005.



LONG PHAM
PRIMARY EXAMINER